DOE/EH-23-USQ-2005-3

USQ

Unreviewed Safety Question Activity Report 2005-3

July – September 2005

Office of Facility Safety (EH-2)

Office of Environment, Safety and Health

Helping the Field Succeed with Safe and Reliable Operations

U.S. Department of Energy

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Introduction

The Unreviewed Safety Question (USQ) process alerts the Department of Energy (DOE) to events, conditions, or actions that are not within the DOE-approved safety basis of a facility or operation and ensures appropriate DOE line management action. Figure 1 shows the steps in the USQ process.

Part of the mission and function of the Office of Facility Authorization Bases (EH-23), which is a part of the Office of Facility Safety (EH-2), is to maintain operational awareness of the Department's USQ activities. EH-23 staff members prepare a quarterly *USQ Activity Report* showing the status of USQs across the DOE complex. To prepare the activity report and develop complex-wide statistics and insights, staff members:

- review and analyze Occurrence Reporting and Processing System (ORPS) reports on USQs identified at DOE sites,
- determine the causes of USQs related to safety basis documents, and
- maintain a USQ database for monitoring and tracking purposes.

Since 2001, EH-23 has produced more than two dozen periodic reports and catalogued 286 USQs in a database. USQs identified from July 2005 through September 2005 are summarized in the current report.

USQ

Unreviewed Safety Question (USQ) means a situation where

(1) The probability of the occurrence or the consequences of an accident or the malfunction of equipment important to safety previously evaluated in the documented safety analysis could be increased;

(2) The possibility of an accident or malfunction of a different type than any evaluated previously in the documented safety analysis could be created;

(3) A margin of safety could be reduced; or

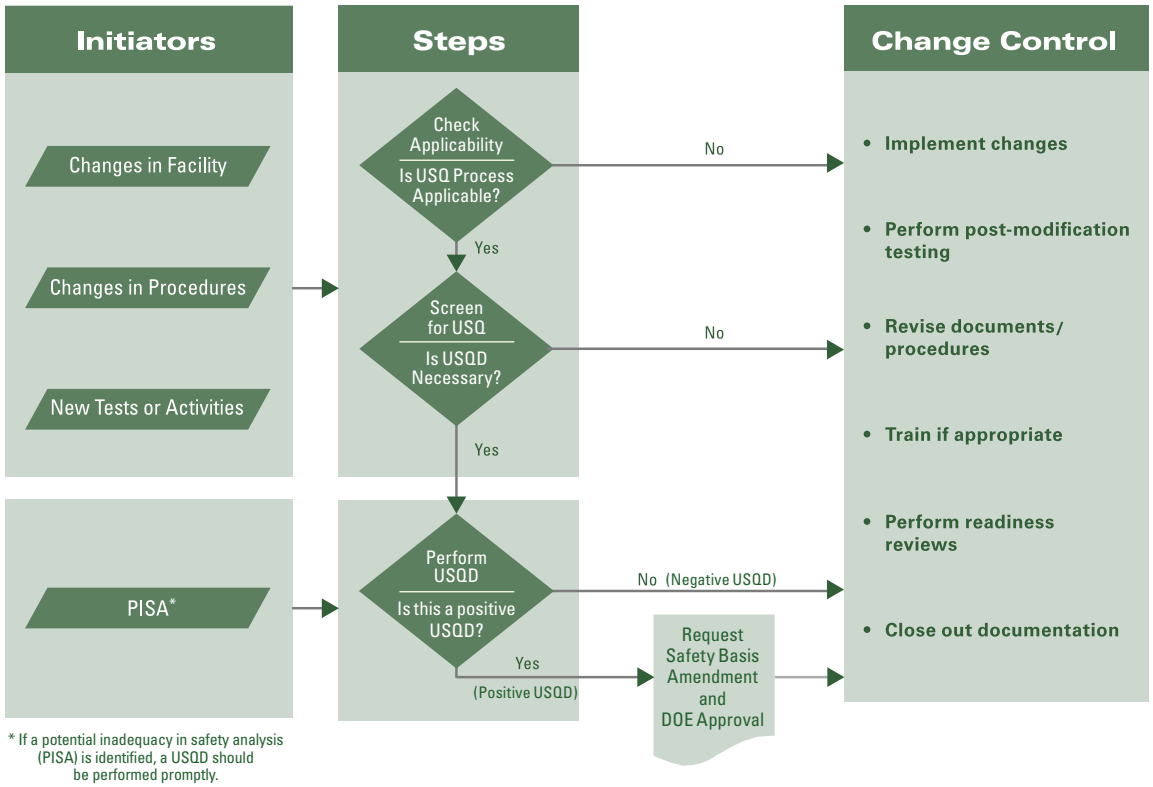
(4) The documented safety analysis may not be bounding or may be otherwise inadequate.

10 CFR 830.3

The existence of a USQ does not mean that the facility or operation is unsafe. The USQ process alerts DOE to events, conditions, or actions that affect the approved facility safety basis and ensures that DOE line management takes appropriate action.

Figure 1

Unreviewed Safety Question Process



Purpose of the USQ Process

The Unreviewed Safety Question process means the mechanism for keeping a safety basis current by reviewing potential unreviewed safety questions, reporting them to DOE, and obtaining approval from DOE prior to taking any action addressing them.

10 CFR 830.3

The USQ process is primarily applicable to the Documented Safety Analysis (DSA). The DSA must include conditions of approval in safety evaluation reports and facility specific commitments made in compliance with DOE Rules, Orders or Policies.

DOE G 424.1-1

Background

Requirements for USQs are detailed in Title 10, *Code of Federal Regulations* (CFR) Part 830.203, "Unreviewed Safety Question Process." They are as follows.

1. The contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility (hereafter referred to as contractor) must establish, implement, and take actions consistent with a USQ process that meets DOE requirements.
2. The contractor must implement the DOE approved USQ procedure when there is (a) temporary or permanent change in the facility, procedures, (b) test or experiment not described in the Documented Safety Analysis (DSA), or (c) a potential inadequacy of the DSA.
3. The contractor must obtain DOE approval prior to taking any action addressing any of the conditions in requirement 2 above.

DOE G 424.1-1, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*, provides information to assist in implementation and interpretation of the Rule.

The existence of a USQ does not mean that the facility or the operation is unsafe. However, when a change is proposed or a condition is discovered that could increase the risk of operating a facility beyond what was established in the current safety basis, a potential USQ exists. The contractor then must prepare a USQD report. If the existence of USQ is confirmed, the contractor must submit the USQD report to the local DOE office, which reviews it for acceptability prior to issuing the approval, following which the safety basis document must be revised by the contractor.

USQD Document

An **Unreviewed Safety Question Determination** (USQD) document contains the review of a change or a situation where there is reason to believe that the facility's existing safety analysis may be in error or is otherwise inadequate. It records the scope of the determination and an explanation of the technical basis for the conclusions reached.

DOE G 424.1-1

Background (continued)

If more USQs are identified at one facility than at another, it does not indicate that the risk from operating that facility or site is greater. In fact, identifying a USQ that originates from a PISA provides an opportunity to correct past errors and indicates thoroughness in assessing the planned changes.

DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, requires that any USQ originating from a PISA must be reported to the Department's Occurrence Reporting and Processing System (ORPS). The EH-23 USQ Activity Report is based on a review of USQ information available in the ORPS database. Any USQ that is not reportable to ORPS (as defined in DOE M 231.1-2) is outside the scope of this report. This is not a limitation because the purpose of this report is to document required improvements to existing safety basis documents.

PISA

A **Potentially Inadequate Safety Analysis** (PISA) exists if the original analysis that supported the DOE-approved safety basis is not bounding or may be otherwise inadequate or inappropriate. The intent is to ensure that operations are conducted in a safe manner consistent with the safety basis. A PISA may result from (1) a discrepant as-found condition, (2) an operational event or incident, or (3) new information, including discovery of an error. The main consideration is that the analysis does not match the current physical configuration of the facility, or the analysis is inappropriate or contains errors.

DOE G 424.1-1

If a contractor responsible for a hazard category 1, 2, or 3 DOE nuclear facility discovers or is made aware of a potential inadequacy of the documented safety analysis, it must:

(1) Take action, as appropriate, to place or maintain the facility in a safe condition until an evaluation of the safety of the situation is completed;

(2) Notify DOE of the situation;

(3) Perform a USQ determination and notify DOE promptly of the results; and

(4) Submit the evaluation of the safety of the situation to DOE prior to removing any operational restrictions initiated.

10 CFR 830.203

Report Preparation

The EH-23 USQ Review Team searches the ORPS database, collects USQ data, and enters all critical items from the ORPS report in a table (Appendix A) that is prepared for each USQ. The team then assesses the completeness of the ORPS report and makes related observations. A list of positive, currently open USQs and any actions taken is maintained until the final ORPS reports are issued (Appendix B). The team determines the cause of each USQ (as related to the safety basis documents) using the codes shown in Table 1 (see Appendix C for details) and presents the information in a graphical format (Figures 2, 3a, and 3b). Contact with site personnel and site visits are made, as necessary, to obtain additional information and to validate the contents of the report.

Table 1

Definitions of Cause Codes*

Cause Code Description	Cause Code ID
Nonexistent Safety Document	A1
Unanalyzed Material Inventory	A2
Unanalyzed Material Properties	A3
Unaddressed Mission Change	A4
Unassessed Equipment Change	A5
Inadequate Safety System	A6
Unanalyzed Accident	A7
Lack of Depth/Details in Accident Scenario	B1
Inadequate or Flawed DSA Analysis	B2
Safety Program Deficiencies	B3
Equipment Malfunction/Failure	B4
Misapplication of DOE Standards	B5
Incorrect Accident Analysis	B6
Inadequacy of Controls	B7

* For more details, see Appendix C.

Summary of Results

Highlights of the positive USQDs reported from July 1, 2005, to September 30, 2005, are described below.

Albuquerque Operations - 1 Positive USQD An inadvertent criticality accident initiator for Planet and Comet Critical Assemblies, not analyzed in the Basis of Interim Operations, was discovered by the facility personnel (NA--LASO-LANL-TA18-2005-0005, *Unanalyzed Accident*).

Idaho Operations - 2 Positive USQDs The consequence of release of the by-products of mixing chemicals, except sulphuric acid, in ATR facilities was not addressed (NE-ID--BEA-ATR-2005-0008, *Inadequate Safety Analysis*). A structural consultant indicated that a seismic analysis of Building 775 vault and workroom roof was not present in the safety basis documentation (NE-ID--BEA-ZPPR-2005-0001, *Unanalyzed Accident*).

Oak Ridge Operations - 3 Positive USQDs Categorization of Buildings 3026C and 3026D changed from Other Industrial to Radiological due to the discovery of an underestimation of radiological material in safety basis documents (EM-ORO--BJC-X10WSTEMRA-2005-0007, *Safety Program Deficiency*). Plant personnel discovered new information on a change of hydrogen fluoride detector set point in Building 9212 (NA--YSO-BWXT-Y12NUCLEAR-2005-0020, *Safety Program Deficiency*). The concentrations used in Design Analysis Calculation for a steam condensate system were inconsistent with the criticality safety evaluation (NA--YSO-BWXT-Y12NUCLEAR-2005-0028, *Inadequate Safety Analysis*).

Richland Hanford Site - 4 Positive USQDs Unanalyzed radioactive material discovered in 327 Facility (EM-RL--327FAC-2005-0002, *Unanalyzed Inventory*), and Plutonium Fabrication Program facilities Building 234-5Z (EM-RL--PHMC-PFP-2005-0021, *Lack of Depth in Accident Scenario*) and Building 241-Z (EM-RL--PHMC-PFP-2005-022, *Unanalyzed Inventory*). DSA incorrectly credits 2736-ZB ventilation to stop supply air to room (EM-RL-PHMC-PFP-2005-0018, *Unanalyzed Inventory*).

Savannah River Site - 2 Positive USQDs The estimate of water content in HB-Line process for production of neptunium was nonconservative (EM-SR--WSRC-KAREA-2005-0001, *Inadequate Safety Analysis*). DWPF DSA contains a non-conservative omission of daughter products in calculating hydrogen generation rate for the ARP waste stream (EM-SR--WSRC-WVIT-2005-0019, *Inadequate Safety Analysis*).

Dominant Causes

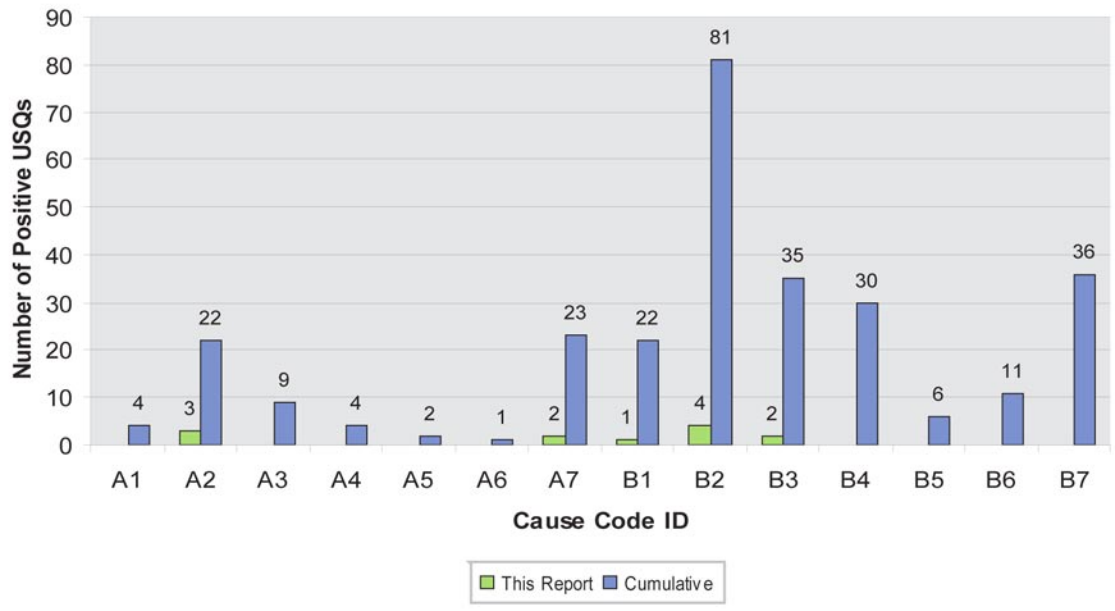
For the 12 positive USQDs identified in this reporting period, the main causes are inadequate safety analysis and unanalyzed material inventory.

Results

From July through September 2005, there were 12 positive USQDs across the DOE Complex. The results of the team's review of the USQDs are discussed below. Specific details for each USQ (in tabular form) are provided in Appendix A. Figure 2 shows USQs reported for this period and the cumulative period from March 2001 through September 2005, grouped by the cause codes defined in Table 1 (page 8). Figure 3a shows the percentages of USQs by cause code for the period of July through September 2005, and Figure 3b shows the percentages of USQs by cause code for the cumulative period of March 2001 through September 2005.

Figure 2

Grouping of USQDs by Cause Code



Note: For the Cause Code definitions, see Table 1 on page 8.
* For the period from March 2001 – September 2005
The cumulative number of USQs equals 286.

Results (continued)

Figure 3a

Percentages of USQs by Cause Code (This Period)

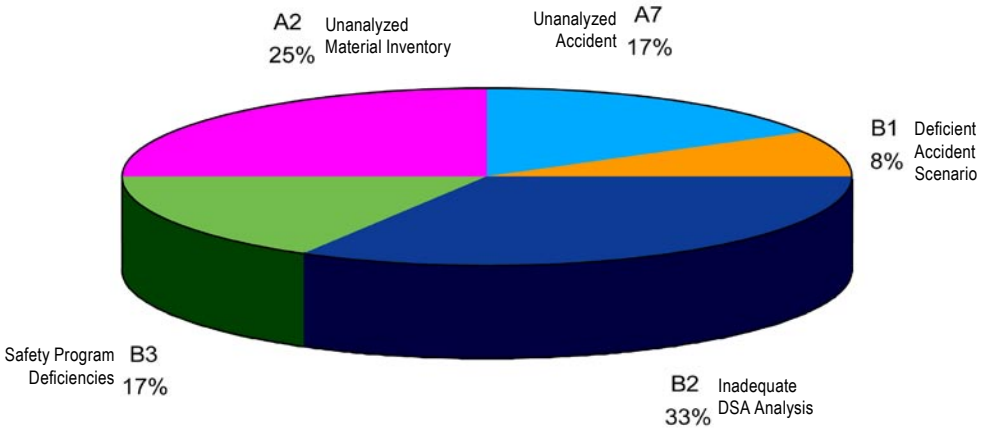
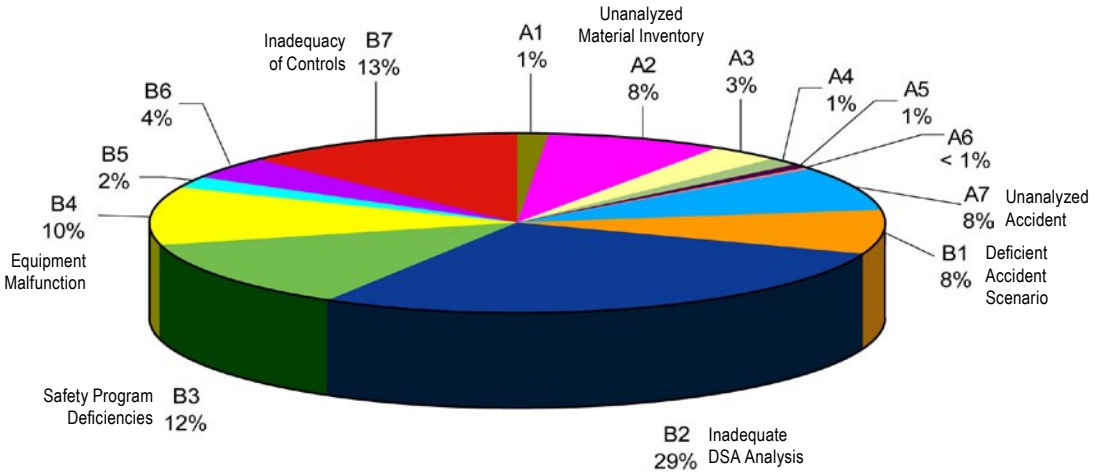


Figure 3b

Percentages of USQs by Cause Code (Cumulative*)



Note: For the Cause Code definitions, see Table 1 on page 8.
* For the period from March 2001 – September 2005

Results for the Current Period

Albuquerque Operations — 1 Positive USQD

Albuquerque Operations identified the following positive USQD.

1 Identification of unanalyzed event sequence leads to positive USQD at the Pajarito Laboratory. (NA--LASO-LANL-TA18-2005-0005) *Cause: Unanalyzed Accident*

Currently Open USQs

- ALO-LA-LANL-LANL-2004-0007 (April 2004), Inadequate Documented Safety Analysis Concerning Type A Designated Packaging used for Fissile Content, Update July 1, 2004
- ALO-LA-LANL-TA55-2004-0009 (September 2004), Modification to TA-55 Fire Detection System Results in Positive USQ, Update February 18, 2005
- ALO-AO-BWXP-PANTEX-2005-0044 (April 2005), PISA/Positive USQ on Separated Connector Cover, Update July 14, 2005
- ALO-AO-BWXP-PANTEX-2005-0057 (May 2005), Positive USQ, SS-21 Development – 150 psi Control on the Phoenix Cart, August 19, 2005

Idaho Operations — 2 Positive USQDs

Idaho Operations identified the following positive USQDs.

1 Seismic analysis of Building 775 vault and workroom roof was not found in the existing safety basis documentation. (NE-ID--BEA-ZPPR-2005-0001) *Cause: Inadequate Safety Analysis*

2 The consequences of the release of the byproducts from mixing of the chemicals in TRA-671 were not addressed in SAR-113. (NE-ID--BEA-ATR-2005-0008) *Cause: Unanalyzed Accident*

Currently Open USQs

- NE-ID-BBWI-ATR-2004-0004 (March 2004), Core Feedback During Loss of Commercial Power, Update 8/18/2005
- NE-ID--BEA-ZPPR-2005-0001 (July 2005), Potentially Inadequate Safety Analysis Relative to the Seismic Qualifications in the ZPPR Vault, Update July 21, 2005
- NE-ID--BEA-ATR-2005-0008 (September 2005), Hazard Analysis for Secondary Chemical Addition System, TRA-671, Update September 19, 2005

Results for the Current Period (continued)

Oakland Operations — No USQs this period

Currently Open USQs

- NA-LSO--LLNL-LLNL-2004-0040 (August 2004), Potential Cracking in Glove Box Exhaust Ducting in Building 332 RMA, Update May 5, 2005
- NA-LSO--LLNL-LLNL-2004-0053 (October 2004), Potential Inadequacy in the Building 332 Safety Analysis, Update October 25, 2005

Oak Ridge Operations — 3 positive USQDs

Oak Ridge Operations identified the following positive USQDs.

1. As-Found Radiological Condition in ORNL Buildings 3029 and 3026D is inconsistent with Other-Industrial Characterization. (EM-ORO--BJC-X10WSTEMRA-2005-0007 update) *Cause: Safety Program Deficiencies*
2. New Information on Changes of HF Detector Set points is not incorporated in the safety basis. (NA--YSO-BWXT-Y12NUCLEAR-2005-0020 Final) *Cause: Safety Program Deficiencies*
3. The concentrations used in the DSA are higher than those used in the criticality analysis. This is non conservative. (NA--YSO-BWXT-Y12NUCLEAR-2005-0028 Final) *Cause: Flawed DSA Analysis*

Currently Open USQ

- EM-ORO--BJC-X10WSTEMRA-2005-0007 (August, 2005), As-Found Radiological Condition in ORNL Buildings 3029 and 3026D is Inconsistent with the Source Term in the Safety Basis

Results for the Current Period (continued)

Richland Hanford Site — 4 Positive USQDs

Richland Hanford identified the following positive USQDs.

1. It was discovered that a source of radium exists in a storage drum (under several layers of packaging) and was not included in the safety analysis. (EM-RL-PHMC-327FAC-2005-0002) *Cause: Unanalyzed Material Inventory*
2. It was discovered that additional fire sequences could be possible or that previously considered fire scenarios are more likely than assumed. (EM-RL-PHMC-PFP-2005-0018) *Cause: Accident Scenario Description Lacks Depth*
3. A forklift became stuck in loose soil, contained combustible material, and was not considered in the safety analysis. (EM-RL-PHMC-PFP-2005-0021) *Cause: Unanalyzed Material Inventory*
4. A review of safety analyses concluded that there is a potential for fire scenarios to exceed consequences in the DSA. (EM-RL-PHMC-PFP-2005-0022) *Cause: Unanalyzed Material Inventory*

Currently Open USQ

- EM-RL-PHMC-327FAC-2005-002 (August 2005), Radium Source Material Container in 327 Facility

Savannah River Site — 2 Positive USQDs

Savannah River Site identified the following positive USQDs.

1. The potential for fire/explosion hazards for one waste source at the Defense Waste Processing Facility was underestimated because some radioactive daughter products were incorrectly omitted from hydrogen generation rate calculations. (EM-SR--WSRC-WVIT-2005-0019) *Cause: Safety Program Deficiencies*
2. Moisture content of neptunium temporarily stored at the K-Area storage facility exceeds safety analysis assumptions. The moisture could result in storage container failures, or hydrogen deflagration because of excessive hydrogen and oxygen pressures as the water radiolytically decomposes. (EM-SR--WSRC--KAREA-2005-0001) *Cause: Safety Program Deficiencies*

Currently Open USQ

- EM-SR--WSRC-WVIT-2005-0019 (September 2005), Positive Unreviewed Safety Question Declared Due to Use of Non-Conservative H2 Generation Rate

Glossary

Code of Federal Regulations (CFR) The codification of the general and permanent rules published in the *Federal Register* by the executive departments and agencies of the Federal Government. The Code is divided into 50 titles that represent broad areas subject to Federal regulation. Title 10 is *Energy*, and 10 CFR 830 contains rules for nuclear safety management.

Documented Safety Analysis (DSA) Analysis that defines the extent to which a nuclear facility can be operated while ensuring the safety of workers, the public, and the environment. The document includes a description of conditions, boundaries of operations, and hazard controls.

Occurrence Reporting and Processing System (ORPS) A database used to document daily operational occurrences at all DOE sites.

Potentially Inadequate Safety Analysis (PISA) A condition that exists if the original analysis that supported the DOE-approved safety basis is not bounding or may be otherwise inadequate or inappropriate. A PISA may result from a discrepant as-found condition, an operational event or incident, or new information, including discovery or error. The main consideration is that the analysis does not match the current physical configuration of the facility, is inappropriate, or contains errors. The intent is to ensure that operations are conducted in a safe manner consistent with the approved safety basis.

Safety Basis Documented safety analysis and hazard controls that provide reasonable assurance that a DOE nuclear facility can be operated in a manner that adequately protects workers, the public, and the environment. Safety Basis is a subset of **Authorization Basis** in that the Authorization Basis may include corporate operational and environmental requirements.

Unreviewed Safety Question (USQ) means a situation where (1) the probability of the occurrence or the consequences of an accident or the malfunction of equipment important to safety previously evaluated in the documented safety analysis could be increased; (2) the possibility of an accident or malfunction of a different type than any evaluated previously in the documented safety analysis could be created; (3) a margin of safety could be reduced; or (4) the documented safety analysis may not be bounding or may be otherwise inadequate.

USQ Determination (USQD) Document A USQ Determination document contains the review of a change or situation where there is reason to believe that the facility's existing safety analysis may be in error or is otherwise inadequate. The Code of Federal Regulations requires that USQ evaluations be documented, including recording the scope of the determination and the technical basis for concluding that an unreviewed safety question does, indeed, exist.

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Appendix A

Summary Descriptions of USQs for the Reporting Period

(The USQs in this appendix are arranged by sites and their facilities.)

ORPS ID Status	NE-ID--BEA-ATR-2005-0008 Update	Reporting Criteria	3B(1)	Category	2	ES&H Impact	Potential	USQ Cause Code	A7
Title	Hazard Analysis for Secondary Chemical Addition System, TRA-671			Date and Time Discovered			09/19/2005 16:10 (MTZ)		
Site/Facility	Idaho National Laboratory/Advanced Test Reactor			DOE Secretarial Office			NE - Nuclear Energy, Science and Technology		
Facility Manager Phone	Martin B. McDonough (208) 533-4321			Local DOE Contact Phone			B. Davis NE-ID Not Available		
Originator Phone	Marjorie A. Owens (208) 533-4563			Contractor			Battelle Energy Alliance, LLC		

Description:
The Idaho National Laboratory (INL) safety analysis guidelines for hazardous material releases states the release of chlorine dioxide has high consequences for on-site workers, co-located workers, and the off-site public. The consequences of releasing chlorine are high for on-site workers and co-located workers. Hazard materials in TRA-671 are addressed in Chapter 20 of Safety Analysis Report (SAR)-153, Upgraded Final Safety Analysis Report for the ATR. The consequence of release of the by-products by mixing of the chemicals is not addressed in SAR-153; it only addresses release of a single chemical (sulfuric acid) from TRA-671. The SAR does take credit for the sump in TRA-671 to prevent mixing; however, does not designate the sump as a safety structure, system, or component. The high consequence for off-site public would likely result in a safety-class designation using the INL evaluation guidelines.

Successful mitigation of the ATR safe shutdown earthquake requires operator actions to manipulate valves in the vicinity of TRA-671. The lethal concentrations hazardous by-products from mixing could preclude completion of the actions. Potential to preclude these operator actions would likely result in a seismic category I safety related designation.

Contractor Action:
Appropriate BEA management and NE-ID personnel were notified.

A USQ evaluation was initiated.

Plans are being developed to expeditiously drain the sodium chlorate tank (DREW 3025) in TRA-671. Initial engineering review shows controlling 3025 tank level sufficiently low will preclude seismic concerns. Formal Engineering evaluation is in progress. The 3025 tank will be maintained essentially empty after draining until Engineering analysis is complete.

Safety Basis Document Corrective Actions (CA):
Is Further Evaluation Required?: Yes
If YES - Before Further Operation? No
By whom?
By when?

DOE Field Office Action:
None specified. However, a HQ Summary exists.

All CA Status:
Corrective actions to be developed and followed up.

EH-23 Assessment: There are potential consequences to workers and the public. For issues like this one, it is desirable to promulgate the local DOE findings and assessments. EH 23 will follow up on the corrective action. Cause: Unanalyzed accident.

ORPS ID Status	NE-ID--BEA-ZPPR-2005-0001 Update	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	B2
Title	PISA Relative to the Seismic Qualifications in the ZPPR Vault			Date and Time Discovered			07/21/2005 11:40 (MTZ)		
Site/Facility	Idaho National Laboratory/Zero Power Physics Reactor			DOE Secretarial Office			NE - Nuclear Energy, Science and Technology		
Facility Manager Phone	Susan D. Mousseau (208) 533-7156			Local DOE Contact Phone			J. Geringer DOE-ID Not Available		
Originator Phone	Susan D. Mousseau (208) 533-7156			Contractor			Battelle Energy Alliance, LLC		

Description:
The ZPPR Documented Safety Analysis (DSA) states that Building 775 was designed in accordance with the UBC Zone-2 requirements for seismic activity. Following a recent seismic walkdown of the Zero Power Physics Reactor (ZPPR), a structural consultant indicated that a seismic analysis of the building 775 vault and workroom roof diaphragm was not found in existing safety basis documentation.

On 21 July 2005, a potentially inadequate safety analysis was declared.

The lack of (or inability to locate) specific historical seismic analysis documentation for the Building 775 roof structure does not necessarily mean that the existing building structure cannot satisfy current structural seismic performance standards. As a conservative interim action, BEA has issued a positive Unresolved Safety Question (USQ) determination pending further evaluation and seismic analysis. (See USQ Evaluation ZPPR-2005-05, dated 17 August 2005).

Contractor Action:
Controls on fissile material that may be added to specific storage locations in vault 64 have been established to preclude increasing the potential fissile material that may be available for damage during the postulated design basis earthquake until verification of roof structure seismic qualification. Specifically:
1. No new fissile material may be added to the vault 64 inventory in bird cages.
2. No new fissile material may be added to the vault 64 inventory without specific approval from the Experimenter Facilities Manager.
3. Consistent with current practice, no stacking of fuel bearing drums is authorized.
These restrictions were relayed to operations personnel with a Timely Order to Operate letter.

Safety Basis Document Corrective Actions (CA):
Is Further Evaluation Required?: Yes
If YES - Before Further Operation? No
By whom? Facility Engineering
By when? 03/31/2006

DOE Field Office Action:
None specified. However, a HQ Summary exists.

All CA Status:
Corrective actions to be developed.

EH-23 Assessment: Pending the completion of the needed analyses, several actions have been taken. EH-23 will monitor the developments.
Cause: Inadequate safety analysis.

ORPS ID Status	NA--LASO-LANL-TA18-2005-0005 Final	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	A7
Title	Identification of Unanalyzed Sequence Leads to Positive USQD			Date and Time Discovered			07/11/2005 19:08 (ETZ)		
Site/Facility	Los Alamos National Laboratory/Pajarito Laboratory			DOE Secretarial Office			NA - National Nuclear Safety Administration		
Facility Manager Phone	Tom Beckman (505) 665-3134			Local DOE Contact Phone			Ed Christy Not Available		
Originator Phone	Joseph B. Richardson (505) 665-4844			Contractor			Los Alamos National Laboratory		

Description:
TA-18 personnel discovered a Potentially Inadequate Safety Analysis condition regarding a new accident initiator related to a single point failure not previously analyzed in the facility's Basis for Interim Operations (BIO) for the Planet and Comet Critical Assemblies (CAs). Both machines have a movable bottom platform that moves fuel to a fixed upper arrangement and each has an experiment-specific, load bearing design that potentially may constitute a single point failure. This inadvertent criticality accident initiator was not analyzed in the TA-18 BIO, and represents a potential inadequacy of the TA-18 Documented Safety Analysis. Subsequently, both the Planet and the Comet CAs were shut down and cannot be operated without DOE approval. An evaluation was initiated and this issue was found to be a positive Unreviewed Safety Question.

Contractor Action:
Planet and Comet were shut down, and cannot be operated without DOE approval. Neither critical assembly can operate until DOE reviews and approves all corrective actions. A corrective action was developed and implemented by 08/10/2005.

Safety Basis Document Corrective Actions (CA):
The corrective action: TA-18 personnel submitted for NNSA a TSR modification which adds a Design Feature to address the scenario of concern. The corrective action was completed on 08/10/2005.

DOE Field Office Action:
Not provided but a HQ Summary exists.

All CA Status:
Corrective action is complete.

EH-23 Assessment: Cause: Potential accident scenario missed in the DSA - Cause Code A7.

ORPS ID Status	EM-ORO--BJC-X10WSTEMRA-2005-0007 Update 9-28-05	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	B3.iii
Title	As-Found Radiological Condition in ORNL Buildings 3029 and 3026D Affecting Characterization			Date and Time Discovered			08/03/2005 15:00 (ETZ)		
Site/Facility	Oak Ridge National Laboratory/Bethel Valley BOPCP			DOE Secretarial Office			EM - Environmental Management		
Facility Manager Phone	S. Smith (865) 241-6226			Local DOE Contact Phone			Lon Brock DOE-FR Not Available		
Originator Phone	James K. Pemberton (865) 574-3282			Contractor			Bechtel Jacobs Company, LLC		

Description:
Categorization of Building 3026C and 3026D changed from Other Industrial to Radiological. During recent activities, as-found conditions in Facilities 3026D and 3029 were not consistent with the safety basis documentation. In both cases, the as-found radiological levels exceeded those stated in the documented safety basis. There is potential that a similar as-found condition will be discovered in ORNL Facility 3028.

Appendix A of the hazard screening (HS/3029/F/RT-6) estimates the inventory in Cell 2 of Building 3029 to be only 350 micro-curies of beta-gamma contamination. However, during characterization activities conducted in the 3029 Hot Cells, a probe was inserted into Cell 2, and the general dose rate in the cell was measured to be 70 R/hr. This dose rate did not fluctuate significantly as the probe was inserted deeper into the cell. This implies that the radiation is being emitted from contamination distributed uniformly on the floor, rather than from a discrete item remaining behind in the cell. If the radiation were being emitted from a discrete item, the dose rate would increase or decrease as the probe moved toward or away from the item. Such a high dose rate indicates that the actual inventory in the cell likely exceeds the inventory identified in the safety basis. A smear collected from Cell 2 indicates that the dose is primarily from 137Cs. The smear also indicated that relatively small quantities of 60Co are present. The smear from cell 2 also detected gross alpha contamination at levels that appear to contradict the statement in the existing safety basis that the facility contains no significant alpha. The purpose of this unreviewed safety question determination is to evaluate whether this as-found radiological inventory is within the existing safety basis.

Contractor Action:
Building 3029 is inactive and in the Surveillance and Maintenance Program. The building is locked and can only be entered by authorized personnel.

The Facility Manager formally notified personnel and organizations that have access to Building 3029 of the new hazard (radiological inventory) and controls for entry (Facility Manager approval).

Safety Basis Document Corrective Actions (CA):
UPDATE 9/28/2005: This report is being updated to provide additional time to complete the corrective action plan. The causal analysis has been completed and this occurrence is part of a programmatic issue with the adequacy of adopted safety basis documents for Other Industrial and Radiological Facilities where conditions are being discovered during physical characterization activities that exceed existing safety basis thresholds. Incomplete.

Local Tracking System Name: ICATS

DOE Field Office Action:
No input from DOE Representative but a HQ Summary exists.

All CA Status:
Further evaluation required.

EH-23 Assessment: Cause: Safety Program Deficiencies B3. Further evaluation by the contractor is needed and no corrective actions have been identified.

ORPS ID Status	NA--YSO-BWXT-Y12NUCLEAR-2005-0020 Final 8-26-05	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	B3.iii
Title	Positive USQ - New Information on Change to Basis of HF Detector Setpoint			Date and Time Discovered			07/06/2005 09:30 (ETZ)		
Site/Facility	Y-12 National Security Complex/Y-12 Nuclear Operations			DOE Secretarial Office			NNSA - National Nuclear Security Administration		
Facility Manager Phone	Annette Levin (865) 241-2195			Local DOE Contact Phone			Steve Wellbaum Not Available		
Originator Phone	Denise D. Large (865) 576-3952			Contractor			BWXT Y12		

Description:
Plant personnel discovered a Potentially Inadequate Safety Analysis condition regarding new information on a change of the Hydrogen Fluoride (HF) detector setpoint in Building 9212. The facility's Basis for Interim Operations documentation specified a HF detector setpoint of 2.4 parts per million (ppm). However, recent IH training indicated that the personal protection alarm setpoint should be 2 ppm. Subsequently, management directed a suspension of HF transfers, venting, or purging within the facility, pending further evaluation. A critique was held. The USQD was determined to be positive.
1/1/05 ACGIH issued the 2005 TLVs with HF at 2 ppm and introduced TWA at 0.5 ppm. Industrial Hygiene (IH) was informed of this change. BIO (9/23/04) for 9212 BIO Rev. 18, sets these limits for personnel protection at regarding 3 ppm. This inconsistency is categorized as Occurrence 3B-2, Category 3 on 7/5/05. USQD-05B1W-033-Rev-0 approved on 07/09/2005 determined this to be a positive USQ. This event will therefore be categorized as Occurrence 3B-1, Category 2, Positive USQ.

Contractor Action:
1) Immediate controls on the facility to ensure safe operations are: "No HF venting, purging, or transfers are allowed." until further notice. 7/5/05.
2) Daily Order from 9212 Operations Manager to 9212 Shift Managers, STAs instructing: "Until further notice, There shall be no HF transfers, venting, or purging.
3) Notifications were made to the on-call YSO Facility Representative, Plant Shift Superintendent, Facility Safety Functional Area Manager, and Acting Division Manager 07/07/05:
4) 9212 Operations Manager e-mailed all Y-12 Operations Managers of the occurrence and its potential applicability on their Safety Basis.

Safety Basis Document Corrective Actions (CA):
ES&H to determine a standard or policy to disseminate information regarding changes to chemical threshold/ limit values/ratings (ex: TLV, PEL, H/F/R) to affected disciplines. The values recommended by ACGIH have been implemented. In future this will be done according to a new procedure. SAE to determine methodology for addressing changed ES&H values on Safety Basis documents (e.g., BIO/OSR, SAR,). Target Completion Date: 12/15/2005. Final 8/26/05.

DOE Field Office Action:
No input from DOE Field Representative.

All CA Status:
Formal lessons learned and corrective actions completed 9/29/05. Some actions incomplete.

EH-23 Assessment: Cause: Safety Program Deficiencies, B3. The ORPS report is closed. The adequacy of the corrective action and its completion will have to be followed separately.

ORPS ID Status	NA--YSO-BWXT-Y12NUCLEAR-2005-0028 Final	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	B2.iv
Title	Potential USQ-9212 Accountable Steam Condensate System			Date and Time Discovered			08/26/2005 15:09 (ETZ)		
Site/Facility	Y-12 National Security Complex/Y-12 Nuclear Operations			DOE Secretarial Office			NNSA - National Nuclear Security Administration		
Facility Manager Phone	Annette Levin (865) 241-2195			Local DOE Contact Phone			None Provided Not Available		
Originator Phone	Damien R. Bowers (865) 576-1263			Contractor			BWXT Y12		

Description:
A concern was expressed on Friday, August 26, 2005, regarding the Accountable Steam Condensate (ASC) system. The concern was that concentrations used in a Design Analysis Calculation (DAC) were not consistent with the concentrations referenced by the Criticality Safety Evaluation (CSE) in a non-conservative manner. This concern was expressed in a meeting with the 9212 Operations Manager, which ended at 15:00. The 9212 Operations Manager indicated that none of the affected equipment was in operation at that time. At 15:09, the 9212 Operations Manager instituted immediate compensatory measures regarding the Status Board for ASC. All ASC units were statused as INOPERABLE and were also tagged as DO NOT OPERATE. A meeting was held on Monday, August 29 at 10:00 with the initiator of the concern and engineering personnel. After that meeting a discussion was held regarding a Potential Inadequacy in the Safety Analysis (PISA). At 12:25, the 9212 Shift Manager under direction of the 9212 Operations Manager filed an occurrence, 3B-2 Category 3. An Unreviewed Safety Question Determination (USQD) was performed on the isolation response time for the intermediate evaporators, oxide dissolver, wiped film evaporator, and tray dissolvers and the evaluation concluded a USQ did not exist for these systems. The LCO allows for each ASC isolation unit to be separately considered for operability and USQD -05-9212-025-Rev-0 was performed on the high capacity evaporator system and the evaluation concluded a USQ did exist based on a reduction in the margin of safety.

Contractor Action:
08/26/05
15:09 - 9212 SM Informed by 9212 Acting Operations Manager (AOM) due to Potential USQ - All ASC units were placed inoperable and were also tagged as "DO NOT OPERATE".
-9212 AOM spoke with Engineering personnel; Engineering personnel met over the weekend.

08/29/05
10:00 - Meeting was held with the initiator of the concern (OA Team Member), Criticality Safety, Facility Safety, Operations, DOE Criticality Safety, DOE Systems Engineering, and Engineering.
11:12 - A PISA discussion was initiated - Engineering advised that a Potential USQ may exist.

Safety Basis Document Corrective Actions (CA):
Revise procedures governing pour up activities to include a cautionary statement to restrict pour up of multiple consecutive containers of high equity solution for transfer to the high capacity evaporator. Target Completion Date: 11/02/2005.

DOE Field Office Action:
Reviewed by the DOE facility representative. DOE Facility Representative Charles A. Hughey.

All CA Status:
A formal lessons learned and procedures are being revised.

EH-23 Assessment: Cause: Inadequate or Flawed DSA Analysis B2. USQD finding changed from negative to positive. The ORPS report is closed but the adequacy and completion of the corrective actions will have to be followed separately.

ORPS ID Status	EM-RL--PHMC-327FAC-2005-0002 Update	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	A2
Title	Radium Source Material Container in 327 Facility			Date and Time Discovered			8/11/05 14:40 (PTZ)		
Site/Facility	Hanford D&D/Building 327			DOE Secretarial Office			EM - Environmental Management		
Facility Manager Phone	R. E. Gregory (509) 373-9890			Local DOE Contact Phone			Brian Biro Not Available		
Originator Phone	R. L. Smithwick (509) 376-3030			Contractor			Project Hanford Management Contractor		

Description:
During on-going deactivation and decommission work planning, 327 facility management determined that a potential inadequacy of the documented safety analysis (PISA) exists with respect to the Radium Source Material container that has been stored in the 327 facility for several years. According to available documentation, the 55 gallon drum is an over-pack for a 30 gallon drum that is an over pack for an inner container with approximately 123 millicuries of radium in a Hydrochloric Acid solution. There is no indication of deterioration or leakage of the container. A positive USQ Determination was made.

Cause: This was assigned cause code A2, discovery of additional radioactive material not included in DSA. (From Table-1)

Contractor Action:
A standing instruction was issued that precludes movement or opening of the Radium Source Material Drum without approval of the facility management and nuclear safety.

Determination of a positive USQ.

Safety Basis Document Corrective Actions (CA):
Controls, in addition to those established as an immediate action, will be determined through established formal hazards analysis processes. This analysis and resultant controls will undergo DOE review and approval in accordance with company and DOE procedures. A corrective action # has not yet been assigned.

DOE Field Office Action:
Review status of actions; review and approve safety basis changes.

All CA Status:
A corrective action number should be provided by next period.

EH-23 Assessment: Review final ORPS report expected for next quarter. The ORPS report should clearly define the PISA and transition to a USQD.

ORPS ID Status	EM-RL--PHMC-PFP-2005-0018 Final Report	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	B1
Title	DSA Incorrectly Credits 2736-ZB Ventilation Instrumentation and Damper to Stop Supply Air to Room			Date and Time Discovered			7/19/05 12:00 (PTZ)		
Site/Facility	Safety Basis/2736-ZB/Ventilation System at Hanford Site			DOE Secretarial Office			EM - Environmental Management		
Facility Manager Phone	B. J. Gray (509) 373-7221			Local DOE Contact Phone			J. E. Spets Not Available		
Originator Phone	John M. Lukes (509) 373-3104			Contractor			Project Hanford Management Contractor		

Description:
The question was raised whether the new Documented Safety Analysis controls had addressed a previously identified issue from the previous Safety Analysis Report as documented in Potential Inadequacy in the Safety Analysis (PISA) PFP-2002-05 "Potential Inadequacy in PFP Safety Basis for Stabilization and Packaging Equipment Room 642 Design Basis Earthquake with Fire Analysis and Controls." Adjacent Rooms 642B and 642A do not have controls on their air supply. These rooms were not constructed with seismically qualified walls and the walls could fail during a DBE. If this occurs, the supply to these rooms could provide the motive force to exhaust the materials released into Room 642 and out of the building. This could increase the frequency for the release above the assigned BEU event (the loss of confinement would no longer be beyond extremely unlikely).

Contractor Action:
Until the DSA is changed, the amount of material potentially placed in the gloveboxes will be limited.

Safety Basis Document Corrective Actions (CA):
Five corrective actions identified; tracking established (CARF#20051120)

The most significant corrective action is to update and submit for DOE-RL approval changes in the safety basis. The remaining items involve lessons learned and management awareness.

DOE Field Office Action:
Review status of actions; review and approve safety basis changes.

All CA Status:
Appear to be on track for completion by end of October 2005.

EH-23 Assessment: This was assigned category B1, since the accident scenario previously was not sufficiently developed. Cause: Lack of depth in accident scenario.

ORPS ID Status	EM-RL--PHMC-PFP-2005-0021 Final Report	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	A2
Title	Transient Combustible Material Requiring Controls (stuck forklift) Located Inside a TRU Waste Storage Area			Date and Time Discovered			7/26/05 14:00 (PTZ)		
Site/Facility	Building 234-5Z/Outside TRU Waste Storage Area at Hanford Site			DOE Secretarial Office			EM - Environmental Management		
Facility Manager Phone	B. J. Gray (509) 373-7221			Local DOE Contact Phone			None Provided Not Available		
Originator Phone	John M. Lukes (509) 373-3104			Contractor			Project Hanford Management Contractor		

Description:
On 7/13/05 a forklift became stuck in loose soil at an outside Transuranic (TRU) waste staging/storage area within the PFP complex. The event surfaced when DOE-RL facility representatives questioned the meaning of transient combustible material with respect to the bogged forklift. The PFP safety basis requires controls for combustible material at TRU Waste staging/storage areas. Neither the PFP Safety Basis Team, not the PFP Solid Waste Operations Team, fully appreciated that the forklift represented combustible material.

Contractor Action:
Cease all activities, notify Solid Waste Operations Management, and make arrangements to remove the forklift.

Safety Basis Document Corrective Actions (CA):
Five corrective actions identified; tracking established (CARF#20051182)
1. Change administrative procedure.
2. Establish a paved area for TRU waste staging/storage.
3. Submit the Safety Basis and TSR changes to DOE-RL.
4. Submit letter on management expectations.
5. Submit lessons learned.

DOE Field Office Action:
Review status of actions; review and approve safety basis changes.

All CA Status:
Appear to be on track for completion in November 2005.

EH-23 Assessment: This was assigned cause code A2 unanalyzed inventory since it was misunderstood that the forklift could constitute hazardous material (potential fire).

ORPS ID Status	EM-RL--PHMC-PFP-2005-0022 Final Report	Reporting Criteria	3B(1)	Category	2	ES&H Impact	None	USQ Cause Code	A2
Title	Waste Generation/Packaging Activities not Bounded for Unfiltered/Unconfined Areas			Date and Time Discovered			8/11/05 18:15 (PTZ)		
Site/Facility	Safety Basis/241-Z/Waste Handling at Hanford Site			DOE Secretarial Office			EM - Environmental Management		
Facility Manager Phone	B. J. Gray (509) 373-7221			Local DOE Contact Phone			J. E. Spets Not Available		
Originator Phone	John M. Lukes (509) 373-3104			Contractor			Project Hanford Management Contractor		

Description:
On August 10, 2005, a review of waste generation and packaging activities was conducted. It was determined that the DSA does not adequately analyze the potential for fires involving uncontained TRU waste in areas without "credited" filtered ventilation or confinement features. It was determined that the DSA must be updated to include this.

Contractor Action:
Put limits, e.g., zero (0) gram TRU waste, on waste packages to be handled in areas without credited filtered ventilation or confinement features until safety basis changes approved.

Safety Basis Document Corrective Actions (CA):
Five corrective actions identified; tracking established (CARF#20051255).

The most significant corrective action is to update and submit for DOE-RL approval changes in the safety basis. The remaining items involve lessons learned and management awareness.

DOE Field Office Action:
Review status of actions; review and approve safety basis changes.

All CA Status:
Appear to be on track for completion in December 2005.

EH-23 Assessment: This was assigned cause code A2, unanalyzed inventory.

ORPS ID Status	EM-SR--WSRC-KAREA-2005-0001 Final	Reporting Criteria	3B(1)	Category	2	ES&H Impact	Potential existed	USQ Cause Code	B2.xi
Title	Neptunium Oxide Moisture PISA (Upgraded to Positive USQ)			Date and Time Discovered			08/03/2005 19:20 (ETZ)		
Site/Facility	Savannah River Site/K-Area, 105-K, Storage			DOE Secretarial Office			EM - Environmental Management		
Facility Manager Phone	Richard M. Sprague (803) 557-3730			Local DOE Contact Phone			G. Yaffe (803) 557-3249		
Originator Phone	Jeffery M. Dukes (803) 208-6588			Contractor			Westinghouse Savannah River Company (WSRC)		

Description:
K-Area is providing storage of neptunium oxide produced by HB-Line that will be used for future production of plutonium-238. The HB-Line product is currently being packaged in 9975 shipping containers (drums) and stored on an interim basis in the 105-K Assembly Area, prior to shipment to the Idaho National Laboratory (INL).

Laboratory analysis performed on (2) samples taken early in production of neptunium indicate moisture content in excess of that expected from the HB-Line process. A potential New Information (NI-105K-05-03) was opened on 7/7/05, based on this preliminary information. To evaluate the potential for generation of hydrogen and oxygen gas resulting from radiolytic decomposition of water with this higher moisture concentration, Calculation X-CLC-H-00560, Analysis of Gas Generation of Off-Specification Neptunium Oxide Stored in 9975 Shipping Package was developed at SRNL. Higher hydrogen and oxygen in the storage containers could cause them to rupture, and present a potential for deflagration.
On 8/25/05, the K-Area Facility Oversite Safety Committee (FOSC) concurred with the USQ prepared to evaluate Neptunium Oxide High Moisture Content for drums stored in K-Area. The USQE evaluated the question of "Could the Proposed Activity create the possibility of an accident of a different type than previously evaluated in the facility Authorization Basis?" as "yes" based on the higher than expected moisture content leading to a potential deflagration concern which was not previously evaluated. The positive USQ is being administratively processed and will be forwarded to DOE-SR.

Contractor Action:
1. Final Storage was placed in the STANDBY mode and barricades were posted.
2. Existing PISA controls previously reported remain in effect.
3. Two drums have been returned and the facility is making preparations to ship the material back to HB-Line, the production facility, for reprocessing.
4. The positive USQ is being administratively processed and will be forwarded to DOE-SR.
SBD CORRECTIVE ACTIONS- CONTINUED: 5. Schedule meeting with H-Area to discuss event issues to avoid facility impacts by 8/4/05, 10. Complete NI Form for PISA by 8/5/05. 11. Consider adding a NMM representative to H-Area's SME Technical Review Team by 8/15/05 12. H-Area to provide procedural link to process controls satisfying K-Area DSA Assumptions. K Area Management to concur with process controls, prior to resumption of shipments by 9/30/05. (All Tracking #'s 2005-CTS-007411 -- 4 corrective actions omitted)

Safety Basis Document Corrective Actions (CA):
1. Establish control to ensure compliance with 384 day limit by 8/20/05, Tracking# 2005-CTS-007411. 2. Obtain information relative to filling of can 20 by 08/20/2005, Tracking# 2005-CTS-007411 3. Obtain copy of H-Area critique relating to this event by 8/4/05, Tracking# 2005-CTS-007411 4. Brief H-Area Ops/Engineering on critique by 8/10/05 Tracking# 2005-CTS-007411.

SEE CONTRACTOR ACTION FOR CONTINUATION

DOE Field Office Action:
None specified. HQ Evaluation concurs with contractor and DOE-SR evaluations.

All CA Status:
Unverifiable.

EH-23 Assessment: There is inadequate specification of potential ES&H impact. Specified actions taken and planned corrective actions should be effective in fulfilling ES&H needs. Cause: Inadequate DSA Analysis.

ORPS ID Status	EM-SR--WSRC-WVIT-2005-0019 Update	Reporting Criteria	3B(1)	Category	2	ES&H Impact	Potential existed	USQ Cause Code	B2.xi
Title	Positive Unreviewed Safety Question Declared Due to Use of NonConservative H2 Generation Rate			Date and Time Discovered			09/16/2005 12:00 (ETZ)		
Site/Facility	Savannah River Site/Defense Waste Processing Facility			DOE Secretarial Office			EM - Environmental Management		
Facility Manager Phone	Jeffery Barnes (803) 208-6060			Local DOE Contact Phone			K. Buchanan (803) 208-7039		
Originator Phone	Harold K. Young (803) 208-6588			Contractor			Westinghouse Savannah River Company (WSRC)		

Description:
On 7/26/2005, Site New Information NI-SITE-05-003 identified a potential non-conservatism in the calculation of radiolytic hydrogen generation rate due to failure to address all applicable radionuclide daughter products. An evaluation of the DWPF safety basis has determined that this problem is applicable to DWPF and constitutes a Potential Inadequacy in the Safety Analysis (PISA). Calculation S-CLC-S-00100 Rev. 0, referenced in the DWPF DSA, contains a non-conservative omission of daughter products in calculating the hydrogen generation rate for the ARP waste stream. Although there are no other direct impacts to the safety basis, this calculation is used to support the implementation of a TSR Administrative Control.

On 10/11/2005, the Defense Waste Processing Facility declared a positive Unreviewed Safety Question (USQ) as a result of the evaluation of the potential inadequacy of the documented safety analysis.

Contractor Action:
Reviewed the use of S-CLC-S-00100 in the safety basis to determine the need for compensatory actions:
1) There are no compensatory actions required in relation to the ARP feed stream because receipt of this stream into the facility is currently prohibited by the authorization agreement.
2) Verified that the last sample was obtained within the new required frequency and initiated program changes to ensure that the new frequency is used in the future.

Safety Basis Document Corrective Actions (CA):
1. Complete PSIA & USQ processing. Present results to Safety Committee (Target: 10/17/05, Responsible: D. Townsend, ID#: STAR 2005-CTS-008451 CA#1)
2. Determine all potential impacts on DWPF (Target: 10/5/05, Responsible: I. Nguyen, ID#: CA#2
3. Revise/implement hydrogen sniffing program changes (Target: 11/1/2005, Resp: B. Davis, ID#: CA#3.
4. Revise hydrogen generation calcs (Resp: D. Townsend Target: 9/30/2006 ID#: CA#4
5. Issue Engineering Position Paper (Resp: L. Nguyen

DOE Field Office Action:
None specified.

All CA Status:
Unverifiable.

EH-23 Assessment: There is inadequate specification of potential ES&H impact. Specified actions taken and planned corrective actions should be effective in fulfilling ES&H needs. Cause: Inadequate DSA analysis.

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Appendix B

Status of Open USQs

Appendix B: Status of Current Positive USQ Occurrences Including ORPS Reports Closed During July-August-September 2005 and New Declarations

Reported in Month	Site/Facility	ORPS ID No. Title of Occurrence Issue Level	Status
March 2004	Idaho National Engineering Lab/ Advanced Test Reactor	NE-ID--BBWI-ATR-2004-0004 Core Feedback During Loss of Commercial Power Update issued 08/18/2005	Occurrence Report No. 13, USQ No. RTC-USQ-2005-336, Discovered: June 15, 2005, 1610: The ATR SINDA-SAMPLE code models the variation in flow rate in the hot fuel plate analysis. The model development did not explicitly address some pertinent sources of uncertainty and therefore may not be conservative. Occurrence Report No. 14, USQ No.: RTC-USQ-2005-248, Discovered: May 4, 2005, 1630: The derivation of the analytical limit setpoint and response time are not consistent with the methods used in the radiological consequence analyses presented in SAR-153, Section 15.7 and 15.12. The methodology used for the derivation of the setpoint could allow higher off-site doses than predicted by the radiological consequence analyses. Since these radiological consequence analyses are the basis upon which DOE approved operation of the ATR, the discrepancy represents a potentially inadequate safety analysis.
April 2004	Los Alamos National Laboratory/ LANL	ALO-LA-LANL-LANL-2004-0007 Inadequate Documented Safety Analysis Concerning Type A Designated Packaging used for Fissile Content Update	05-13-04: The reporting criteria was upgraded from 3B(2) to 3B(1), i.e., the positive USQD was declared. Last update 7/1/04. All corrective actions are completed by 6/15/05.
August 2004	LLNL/ BOP	NA-LSO-LLNL-LLNL-2004-0040 Potential cracking in Glove box Exhaust Ducting in Bldg. 332 RMA Update	Latest Update: 05-05-05: 11/22/04: The USQD has been completed for this OR and it is positive. This will change the categorization of the OR to Group 3, Nuclear Safety Basis, B. Documented Safety Analysis Inadequacies, (1) Determination of a Positive Unreviewed Safety Question (USQ), with a Significance Category of 2. The USQD was done in response to the PISA that was filed. Facility Manager: Several ORs are all currently being worked in parallel and will require additional time to complete and review for signature. The date for evaluation 07-30-05.
September 2004	Los Alamos National Laboratory/ Plutonium Proc & Handling Fac	ALO-LA-LANL-TA55-2004-0009 Modification to TA-55 Fire Detection System Results in Positive Unreviewed Safety Question Update (2/18/2005)	Add Second Fire Alarm Wiring Path. Add a second path for fire alarm transmission to the CAS through concentrator 009 in PF-3. Responsible Group/Division FM-TA-55. Target Completion Date: 7-15-05 Completion Date: 04/20/2005 Reconnect PF-10 and PF-11 Fire Alarms to FCS. Use the second wiring path to reconnect the PF-10 and PF-11 fire alarms to the FCS Responsible Group/Division FM-TA-55. Target Completion Date: 7-15-05 Completion Date: 04/20/2005
October 2004	Lawrence Livermore National Lab./ Lawrence Livermore Nat. Lab. (BOP)	NA-LSO--LLNL-LLNL-2004-0053 Potential Inadequacy in the Bldg. 332 Safety Analysis Latest issue 09/26/05	The USQD has been completed and it is positive with a Significance Category of 2. This will change the categorization of the OR to Group 3. Is Further Evaluation Required? Yes If Yes – Before Further Operation? No By Whom: Facility Management By when? 10/30/05

Reported in Month	Site/Facility	ORPS ID No. Title of Occurrence Issue Level	Status
October 2004	Lawrence Livermore National Lab./ Lawrence Livermore Nat. Lab. (BOP)	NA-LSO--LLNL-LLNL-2004-0056 Potential Inadequacy in the Bldg. 332 Safety Analysis Final 08/19/05	A review of the results of the facility's surveillance requirement procedure for the last three years revealed that the emergency water supply tanks have been maintained to at least 75 psi. The intent of the NEPA requirements of 75 psi has been met since the facility's supply tanks operate at 78 psi. Management will change the current safety Basis documentation to reflect the NEPA value of 75 psi. Facility management deems that continued operation of the emergency water supply tanks is safe. Is Further Evaluation Required? No Corrective actions including revising the current safety basis documentation by 12/19/2005
October 2004	Oak Ridge National Laboratory/ High Flux Isotope Reactor	ORO--ORNL-X10HFIR-2004-0015 New Information on Check Valve Induced Water Hammer (Positive USQ) Final	Notification for closure of USQ has been issued on 9/12/05. Its basis appears to be JCO. ORNL/UTB is proposing to submit this resolution to DOE on November 17, 2005. UTB is also planning to start another HFIR operating cycle in early December 2005.
January 2005	Idaho National Engineering Lab/ICPP Fuel Receipt & Storage Act	EM-ID--BBWI-FUELRCSTR-2005-0001 Potential Inadequacy in Safety Analysis, Cask Centering Device Final issued:3-02-05	Revise the safety basis (SAR-112) to ensure that operational limitations concerning the use of the Cask Centering Device are addressed. Target Completion Date: 10/05/2005 Tracking ID: AI 35867 Perform a detailed review to determine if other SAR-112 safety significant SSCs exist that are not adequately analyzed for operating temperature ranges. Target Completion Date: 05/05/2005 Tracking ID: AI 35869
February 2005	Idaho National Laboratory/Fuels Manufacturing/ Fuel Assembly Storage	NE-ID--BEA-FMF-2005-0001 USQ Relative to the Exclusion of Materials In the Vault Storage from Material at Risk Final issued: 7-11-05	To be implemented: The TSR Specific Administrative Controls identified earlier.
March 2005	Savannah River, Central Laboratories, 772-F	SR--WSRC-CLAB-2005-0002 Positive USQ for Worker Safety Issues, TRU Waste Drums (U) Update: 05-05-05	Final Issue. Updated 04-18-05: The reporting criteria was upgraded from 3B(2) to 3B(1), following determination of a positive USQ. Latest Update: 5/5/05: This update is identified as "UPDATE/FINAL" however, final date and time blocks are blank. 06-23-05: Awaiting completion of CA "Revise the JCO to return the TRU drums to SWMF". Tracking ID: 2005-CTS-002653 CA # 1 Target Completion Date: 06/30/2005
April 2005	Pantex Plant/Balance of Plant	ALO-AO-BWXP-PANTEX-2005-0044 PISA/Positive USQ on Separated Connector Cover Update	Two corrective actions identified and completed on 5/13/05. As of 7/14/05, updated to Positive USQ and with all actions completed.

Reported in Month	Site/Facility	ORPS ID No. Title of Occurrence Issue Level	Status
May 2005	Pantex Plant/Balance of Plant	ALO-AO-BWXP-PNTEX-2005-0057 Positive USQ, SS-21 Development: 150 psi Control on the Phoenix Cart Update	Correction actions are to be developed. Final report extension to 9/16/05 (as of 8/19/05) enabling additional process experts to be engaged.
May 2005	Y12 National Security Complex	ORYS-YSO-BWXT-Y12NUCLEAR-2005-0011, Positive PISA - HF Piping System Final	BWXT has determined that a potentially over pressurized HF cylinder can be safely discharged to the Dock 8/8A scrubber and that neither hydrogen detonation nor equipment damage will occur given the unlikely event of hydrogen ignition. Considering the unlikely determination of a cylinder rupture or hydrogen deflagration, the risk of handling a potentially over pressurized HF cylinder is considered to be acceptable and in keeping with the existing 9212 Complex BIO analysis. JCO has been approved and USQ closed 9/27/05.
June 2005	Idaho National Engineering Lab./ICPP Landlord Activities	ID--CWI-LANDLORD-2005-0003 Positive PISA Screen For CPP-602 Laboratory Final issued: 8-25-05	1.Submit revised SAR-121 to DOE-ID for annual review, incorporating PISA revisions and clearly tracing identification of uranium toxicity through all appropriate sections of chapter 3 and chapter 5. Target Completion Date: 01/31/2006 Tracking ID: DR 38537, AI 37120 2. Provide training for ALD technical staff addressing MAR/accident analysis concepts for hazardous materials, with emphasis on uranium toxicity (to be included in SAR-121 annual tech staff training). Karl J. Hugo, noted: The report does not address the fact that the USQ process was less than adequate. DOE did issue a finding regarding this matter. The contractor acknowledged the finding and is currently tracked through their tracking system.
June 2005	Los Alamos National Laboratory/ Chemistry and Metallurgy Research	ALO-LA-LANL-CMR-2005-0002 Unreviewed consequences of Dropping a Heavy Load in Wing 9 of CMR Determined to be Positive USQD Final (09/14/2005)	Corrective actions to be developed and submitted to NNSA SABM for review and approval. No target dates are specified.
June 2005	Y12 National Security Complex, Balance of Plant infra-structure.	ORO--BJC-Y12WASTE-2005-0002 WETF Facility Categorization Final	According to the notification of 8/31/2005, WETF has submitted a justification for continued operation. Plan for corrective actions about revising procedures has been issued and this USQ is closed.
July 2005	Idaho National Laboratory/ Zero Power Physic Reactor	NE-ID--BEA-ZPPR-2005-0001 Potentially Inadequate Safety Analysis Relative to the Seismic Qualifications in the ZPPR Vault Update	Is Further Evaluation Required?: Yes If YES - Before Further Operation? No By whom? Facility Engineering By when? 03/31/2006

Reported in Month	Site/Facility	ORPS ID No. Title of Occurrence Issue Level	Status
July 2005	Los Alamos National Laboratory/ Pajarito Laboratory	NA--LASO-LANL-TA18-2005-0005 Identification of Unanalyzed Event Sequence Leads to Positive USQD Final (10/03/2005)	Corrective action: TA-18 personnel will submit for NNSA approval a TSR modification which adds a Design Feature to address the scenario of concern. Target Completion Date: 08/10/2005 Completion Date: 08/10/2005
July 2005	Uranium conversion/ Building 9212	NA--YSO-BWXT-Y12NUCLEAR-2005-0020 Occupational HF exposure Limits Final	ES&H to determine a standard or policy to disseminate information regarding changes to chemical threshold/limit values/ratings (ex: TLV, PEL, H/F/R) to affected disciplines. The new values recommended by ACGIH have been implemented.
July 2005	Hanford/ 2736-ZB	EM-RL--PHMC-PFP-2005-0018 DSA incorrectly credits 2736-ZB Ventilation Instrumentation and Damper Final	Five corrective actions identified; tracking established (CARF#20051120)
July 2005	Hanford/ Building 234-5Z	EM-RL--PHMC-PFP-2005-0021 Transient Combustible Material Requiring Controls Located Inside the TRU Waste Storage Final	Five corrective actions identified; tracking established (CARF#20051182)
August 2005	Hanford/ Building 327	EM-RL--327FAC-2005-0002 Radium Source Material Container in 327 Facility Update	The DSA did not address this storage.
August 2005	Hanford/ 241-Z Waste Handling	EM-RL-PHMC-PFP-2005-0022 Waste Generation/Packaging Activities not Bounded for Unfiltered /Unconfined Areas Final	Five corrective actions identified; tracking established (CARF#20051255)
August 2005	ORNL Buildings 3029 and 3026D	EM-ORO--BJC-X10WSTEMRA-2005-0007. As-Found Radiological Condition in ORNL Buildings 3029 and 3026D Affecting Characterization Update	UPDATE 9/28/2005: This report is being updated to provide additional time to complete the corrective action plan. The causal analysis has been completed and this occurrence is part of a programmatic issue with the adequacy of adopted safety basis documents for other Industrial and Radiological Facilities where conditions are being discovered during physical characterization activities that exceed existing safety basis thresholds. Incomplete.

Reported in Month	Site/Facility	ORPS ID No. Title of Occurrence Issue Level	Status
August 2005	Savannah River, K-Area Materials Storage Facility (105-K)	SR--WSRC-KAREA-2005-0001, Np Oxide Moisture PISA (Upgraded to Positive USQ) Final	Final Issue. 7/7/05: Laboratory analysis performed on (2) samples taken early in production of neptunium indicate moisture content in excess of that expected from the HB-Line process. A potential New Information (NI-105K-05-03) was opened. Calculation X-CLC-H-00560, Analysis of Gas Generation of Off-Specification Neptunium Oxide Stored in 9975 Shipping Package was developed at SRNL. 8/25/05: The K-Area Facility Oversite Safety Committee (FSOC) concurred with the USQ prepared to evaluate this situation. A positive USQ was declared based upon "Could the Proposed Activity create the possibility of an accident of a different type than previously evaluated in the facility Authorization Basis?" as "yes." The USQ is now being administratively processed and will be forwarded to DOE-SR.
August 2005	Uranium conversion/processing, Y12	NA--YSO-BWXT-Y12NUCLEAR-2005-0028 Potential USQ-9212 Accountable Steam Condensate System. Final	Revise procedures governing pour up activities to include a cautionary statement to restrict pour up of multiple consecutive containers of high equity solution for transfer to the high capacity evaporator. This will preclude criticality in the system. Revised documents sent to NNSA for continued operation 9/16/2005.
September 2005	Idaho National Laboratory/Advanced Test Reactor	NE-ID--BEA-ATR-2005-0008 Hazard Analysis for Secondary Chemical Addition System, TRA-671 Update	Is Further Evaluation Required?: Yes If YES - Before Further Operation? No By whom? By when?
September 2005	Savannah River, S-Area, Defense Waste Processing Facility (WVIT/DWPF) 221-S	SR--WSRC-WVIT-2005-0019, Positive Unreviewed Safety Question Declared Due to Use of Non-Conservative H2 Generation Rate Update	Update Issue. 07-26-05: Site New Information NI-SITE-05-003 identified a potential non-conservatism in the calculation of radiolytic hydrogen generation rate due to failure to address all applicable radionuclide daughter products. An evaluation of the DWPF safety basis determined that this problem constituted a Potential Inadequacy in the Safety Analysis (PISA). Calculation S-CLC-S-00100 Rev. 0. Tracking ID: 2005-CTS-002653 CA # 1 - 5. Target Completion: 11/01/2005 (latest). 10/11/2005: The Defense Waste Processing Facility declared a positive Unreviewed Safety Question (USQ) as a result of the evaluation of the potential inadequacy of the documented safety analysis. Status: Awaiting completion of CA.

Appendix C

USQ Safety Basis Document Cause Codes

Unreviewed Safety Questions (USQs)
Cause Codes

Potential Unreviewed Safety Questions (USQs) for a facility arise in situations involving events, discoveries, proposed changes in operations to conduct new tests, experiments, D&D, changes in or removal of existing equipment or equipment specifications or introducing new equipment etc., each of which may have safety implications that either are not addressed or are inadequately addressed in the facility's documented safety analysis (DSA), such as: SAR (including SER), BIO, JCO, etc. Any of these situations would trigger a USQ determination process.

Naturally, for a facility without any DSA, virtually every proposed activity in the facility with the potential for an accident constitutes a USQ situation.

There are mainly two types of USQ situations as indicated below:

A. Potential new accident scenarios that are not analyzed in the DSA
B. Potential accident scenarios that are not fully analyzed in the DSA and may have
   - potentially higher likelihood of occurring or
   - potentially higher consequences from occurrence of the accident than those estimated in the DSA.

In the following tables, a compilation of causes for the potential USQ situations is developed. A code is assigned to each of these causes for simplicity of tracking.

Table 1: Type A USQs

Cause Description	Assigned Code
Nonexistent DSA	A1
Discovery of certain radioactive or other hazardous material in the facility inventory that may cause an event scenario with potential for a radiological release that is not analyzed in the DSA	A2
Recognition of chemical and physical properties of radioactive or other hazardous material in the facility inventory that may cause an event scenario with potential for a radiological release that is not analyzed in the DSA	A3
Mission or procedure change during facility operations or change to facility itself which is not addressed in the DSA	A4
Proposed change in the equipment specifications, removal of equipment, or introduction of new systems or equipment into the facility for change in mission, activity or operating procedure, such as during D&D, new experiments, tests, etc.	A5
Inadequate or missing safety systems or barriers to radioactive material release	A6
Potential accident scenarios missed in the DSA	A7

Table 2: Type B USQs

Cause Description	Assigned Code
Accident scenario lacks depth and details: An accident scenario identified in the DSA is not pursued in detail from the initiating event (including its frequency) through: the safety systems response, accident phenomenology and progression, radioactive material behavior, and potential radioactivity release into the work areas inside and to the environment outside of the facility and the consequences of such releases.	B1
Inadequate or flawed analysis (including errors in analysis softwares):	B2.i - xi
i. Seismic, and other natural phenomena and external hazards	
ii. Structural	
iii. Fire	
iv. Criticality	
v. Chemical and/or radiological safety	
vi. Packaging/storage/waste tanks/transportation	
vii. Shielding	
viii. Equipment design, sizing, and qualification specifications	
ix. Airborne exposure pathway to the work areas inside and the environment outside the facility	
x. Liquid exposure pathway to the inside and outside the facility	
xi. Hazards, including explosion, electrical and other	
Deficiencies in programs	B3.i - viii
i. Maintenance (active and passive systems), surveillance, testing, inspection	
ii. Training	
iii. Radiological	
iv. Criticality safety	
v. Fire protection	
vi. Configuration management	
vii. Quality assurance	
viii. Conduct of operation and others	
Equipment malfunction/failure – random failure, maintenance failure (includes safety structure, systems and components, valves, pumps, filters, fans, blowers, resin beds, hardwares, etc.)	B4.i - v
i. Equipment aging, rusting, broken, suspect parts	
ii. Equipment unavailable	
iii. Equipment unreliable	
iv. Equipment out of calibration or alignment (sensors, detectors, meters, CAMs, etc.), interlock non-functional	
v. Others	

Table 2: Type B USQs
(continued)

Incorrect application of Standards, such as STD-1027, STD-3011, STD-3009, DOE-HDBK-3010-94, STD-1120, etc.	B5
Incorrect assumptions in the accident analysis in the DSA	B6.i(a-f) - ii
i. Underestimated source term due to:	
a. Overestimate of credit for packaging/barrier/confinement/waste tank/ESF integrity	
b. Underestimate of Material at Risk (MAR), Damage Ratio, Airborne Release Fraction, Respirable Fraction, Leak Path Factor	
c. Introduction of additional material at risk into, or identification of additional material at risk in the facility, not included in the DSA.	
d. Overestimate of credit for: filter efficiency, clogged filter, saturated resin beds, etc.	
e. Underestimate of spill into the facility or release to the ground or groundwater	
f. Improper binning of source terms, inadequate source term for bounding analysis.	
ii. Underestimate of X/Q and other factors for dose estimates	
Inadequacy of TSR elements that result in undermining or invalidating the assumptions in the DSA	B7.i - ix
i. Safety Limit (SL), Limiting Control Setting (LCS), Limiting Condition of Operation (LCO)	
ii. Interlock configuration, setting, set point, alarm systems.	
iii. Pressure differentials across air-volume compartments for air leakage/flow control.	
iv. Redundancy (established invoking single failure criterion).	
v. Double contingency for criticality safety	
vi. Hazard control/safety systems, system specs, hardwares, operability.	
vii. Administrative controls, surveillance requirements.	
viii. Work procedure.	
ix. Others.	

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Office of Facility Safety (EH-2)
Office of Environment, Safety and Health

Unreviewed Safety Question Activity Report

July – September 2005